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APPLICATION NO	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO	CONFIRMATION NO.
09/719,893	12/19/2000	Mitsuhiko Okada	55259USA2A.005	5878

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EXAMINER

BISSETT, MELANIE D

ART UNIT	PAPER NUMBER
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1711

DATE MAILED: 05/27/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/719,893

Applicant(s)

OKADA ET AL.

Examiner

Melanie D. Bissett

Art Unit

1711

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 20 March 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-18 is/are rejected.
- 7) ☒ Claim(s) 19 and 20 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413) Paper No(s) \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

### DETAILED ACTION

1. The request filed on 3/20/03 for Continued Examination under 37 CFR 1.114 based on parent Application No. 09/917,893 is acceptable and an RCE has been established. An action on the RCE follows.
2. The rejections using Parker-Hannifin Corporation (WO 99/05722) have been withdrawn based on the applicant's amendment. However, the rejections using Bujard have been maintained.

### ***Claim Rejections - 35 USC § 102***

3. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.
4. Claims 1-2, 4-7, 11, and 18 are rejected under 35 U.S.C. 102(b) as being anticipated by Bujard.
5. From a prior Office action:
  7. Bujard discloses a laminate comprising a substrate having a thickness of 10-100  $\mu\text{m}$  and an adhesive layer applied to at least one surface which contains a heat-conductive filler (abstract), thus providing a heat conductive sheet. Since the reference teaches at least one coated side of a substrate, one skilled in the art would envision both single- and double-sided adhesive substrates. Substrates include films, foils, or cloths of metal or synthetic resin (col. 2 lines 3-7). Since metal foil substrates are chosen instead of plastic film, and since claim 3 does not limit a plastic film to be chosen, the reference anticipates any limitation of the plastic film. Suitable adhesives, which may be provided with a release film, include polyurethanes, polyacrylates, and silicones (col. 2 lines 20-29). Bujard cites boron nitride, silicon carbide, and other inorganic fillers as heat conductive fillers.
6. Additionally, Bujard teaches laminating self-supporting adhesive films onto metal foil substrates, including those of 10- $\mu\text{m}$  thickness (example 4).

***Claim Rejections - 35 USC § 103***

7. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

8. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Bujard.

9. From a prior Office action:

16. Bujard applies as above, lacking exemplification of including both silicon carbide and boron nitride particles in the adhesive compositions of the invention. However, the reference does note the use of mixtures of the components (col. 2 lines 51-58). It is the examiner's position that it would have been prima facie obvious to include both silicon carbide and boron nitride particles in the silicon adhesive of the invention in the expectancy of forming a tape having equally improved thermal conductivity.

10. Claims 10 and 12-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bujard in view of DuPont.

11. From a prior Office action:

18. Bujard teaches that adhesives may be applied in molten form (col. 2 lines 23-26). Bujard applies as above, teaching methods for applying coatings by known coating methods including brushing and doctor coating (col. 2 lines 59-62) but failing to specifically teach the steps of supporting the substrate and removing the substrate from the support after coating. Du Pont teaches an improved method of coating by supplying a substrate support for the substrate and metering and supplying a coating solution by meyer bar onto the substrate (p. 2 line 33-p. 3 line 11), where the meyer bar acts similarly to a doctor bar to "squeegee off" excess liquid coating (p. 4 lines 16-30). The product would be removed from the support to be used. Since the coating apparatus provides a substantially uniform coating, it is the examiner's position that it would have been prima facie obvious to use the meyer rod method of DuPont's teaching in Bujard's invention to provide coatings having improved uniformity. Thus, the use of molten adhesive and meyer bar coating suggests the use of heat and an amount of pressure to coat the substrate.

12. Additionally, Bujard teaches curing the adhesive layers by the mention of hardeners and curing accelerators in the preferred adhesive composition (col. 2 lines 30-35).

13. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Bujard in view of Eddy et al.

14. Bujard applies as above for the heat-conductive sheet, noting the use of heat-conductive fillers but lacking express mention of the use of particles of different sizes. Eddy et al. teaches a fuser member comprising a substrate and a thermally conductive fusing layer, where the fusing layer comprises a binder, silicone powder, and alumina particles in at least two different sizes (col. 1 lines 5-20). The use of aluminum oxide is preferred for improved thermal conductivity, and the use of the alumina in two different sizes is preferred to improve the processibility and further improve heat conductivity (col. 6 lines 25-55). Bujard teaches the use of alumina, also teaching the use of fillers in high loadings to increase heat conductivity (col. 2 lines 36-58). From Eddy's teaching, it is the examiner's position that it would have been prima facie obvious to incorporate alumina particles of two different sizes, in a mixture with another filler, into Bujard's invention. A mixture of aluminum oxide of two sizes with another filler would provide a mixture of inorganic particles having different particles diameters. Motivation for including the aluminum oxide of different sizes would have been to further improve heat conductivity and to improve processibility.

15. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Bujard in view of Kawate et al. as evidenced by East et al. and Lieberman.

16. Bujard applies as above, noting that metal and synthetic resin substrates may be used providing the substrate has a melting point higher than about 150 °C (col. 2 lines 3-12). Kawate teaches reactive hot melt compositions for film-form adhesives to be used for adhering electronic parts, where suitable substrates include plastics and metals (col. 1 lines 8-19). Kawate teaches PET substrates as peelable substrates (col. 7 lines 39-49) and also teaches polypropylene as equivalent to metal foil substrates (col. 8 lines 11-18). East et al. show the melting temperature for PET as 260-280 °C, and Lieberman teaches the melting temperature of polypropylene to be 160-165 °C. Since the plastic substrates are known as conventional substrate materials in the hot melt laminate art and since the polypropylene and PET substrates have been shown to have melting temperatures above that required by Bujard, it is the examiner's position that it would have been prima facie obvious to use polypropylene or PET substrates in Bujard's invention with the expectancy of forming an adhesive article having equally improved heat conductivity.

***Allowable Subject Matter***

17. Claims 19-20 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

18. The closest prior art, Bujard (US 5,399,416 A), discloses a laminate having a self-supportive heat conductive adhesive and a substrate, where the substrate has a thickness of 10-100  $\mu\text{m}$ . However, the reference does not indicate substrates having

thicknesses of 1-7  $\mu\text{m}$ , including single spread adhesive film substrates. It is the examiner's position that the applicant's claimed heat-conductive sheet having a substrate of 1-7  $\mu\text{m}$  would be novel and unobvious over the prior art.

### ***Response to Arguments***

19. In response to the applicant's argument that Bujard does not teach a self-supporting adhesive layer, the examiner has pointed to an example in the specification showing the lamination of a self-supporting adhesive film onto a metal foil. See also col. 1 lines 50-63 and col. 3 lines 13-34.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Melanie D. Bissett whose telephone number is (703) 308-6539. The examiner can normally be reached on M-F 8-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, James Seidleck can be reached on (703) 308-2462. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9310 for regular communications and (703) 872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.

mdb  
May 22, 2003

